
The impact of the credit rating of the ESG debt instruments' issuer on the coupon rate

Sylwia Frydrych

Collegium of Management and Finance, SGH Warsaw School of Economics, Poland

e-mail: sfrydr@sgh.waw.pl

ORCID: [0000-0002-1215-4950](https://orcid.org/0000-0002-1215-4950)

©2024 Sylwia Frydrych

This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/>

Quote as: Frydrych, S. (2024). The impact of the credit rating of the ESG debt instruments' issuer on the coupon rate. *Argumenta Oeconomica*, 2(53), 176-185.

DOI: [10.15611/aoe.2024.2.12](https://doi.org/10.15611/aoe.2024.2.12)

JEL: G12, G15, G24

Abstract: This article investigates the potential impact of having credit ratings assigned by multiple rating agencies, including S&P, Moody's, and Fitch, on the issuance of environmental, social and governance (ESG) bonds. It examines the impact on both the coupon rate offered and the volume of debt instruments issued. The research employed a mixed research methods approach, utilising observation methods and analysis of source data. Data for this research was obtained from the Refinitiv Eikon information database. The credit ratings of issuers as at the date of issuance of ESG instruments were analysed, focusing on the credit ratings assigned to issuers of ESG debt instruments issued between 2012 and 2021. Only instruments that were in circulation as of 31 December 2021 were included in the study. The findings suggest a potential link between the number of credit ratings an issuer possesses and both the offered coupon rate and the volume of ESG instruments issued. A review of the existing literature, both theoretical and empirical, does not provide clear evidence of how an issuer's credit rating affects the success of debt issuance in relation to meeting ESG criteria.

Keywords: sustainable finance, credit rating, ESG investing

1. Introduction

In recent years, there has been a growing interest in sustainable development of the economy, while emphasising environmental protection, social responsibility, and governance (ESG). The use of ESG criteria by issuers has become a significant factor for investors worldwide. Funds raised through these issuances should be directed towards financing projects that contribute to achieving ESG goals. Apart from that, ESG instruments have similar risk factors as the remaining financial instruments. Issuing ESG debt instruments may also contribute to the growth of the issuer's credit quality (Agliardi et al., 2021).

This raises the question whether meeting by the issuer the criteria associated with environmental, governance or social relations has an impact on the credit rating. Furthermore, does the fact of having more such ratings by an issuer of ESG debt instruments – which is related to higher fees paid to credit rating agencies – contributes to the lower cost of debt?

The purpose of this article was to investigate whether the fact that issuers of ESG debt instruments have a credit rating granted by more than one credit rating agency has an impact on the coupon rate and the number of debt instruments issued. This purpose was achieved through the process of analysis of credit ratings given by the selected biggest credit rating agencies.

The first section of the text presents a review of the existing literature concerning the criteria associated with ESG factors, and how issuers meet these criteria, also emphasising the contribution of credit rating agencies (CRAs). In the empirical part, the number of credit ratings granted to the issuers by credit rating agencies was analysed. The paper describes the impact of the credit ratings granted by CRAs to issuers who meet ESG criteria on the coupon rate of the issued debt instruments. The author concluded by presenting the role of the credit rating of the issuers of ESG debt instruments in the acquisition of financing.

2. Literature review

Under the term of socially responsible investment, the literature mentions the so-called ESG investments, that is investments executed according to the environmental, social and governance criteria (Duliniec, 2015). A few terms are used as equivalents to describe environmental, social and governance investments, such as socially responsible investing (SRI), responsible investing, sustainable investing, and impact investing. However, the above mentioned terms are slightly different. Socially responsible investing consists in selection or disqualification of a given investment based on the specific ethical criteria. Socially responsible investors may also avoid financial instruments of companies involved in gambling, production of alcohol, tobacco or other addictive substances or violating human rights, whereas impact investing is aimed at supporting the company in achieving social benefits, such as the financing of non-profit research related to clean energy.

The value of an enterprise is measured through the evaluation related to fulfilment of ESG standards. The goal of such a rating is to provide investors with information about the degree to which their investment is exposed to ESG risks which are not sufficiently managed by the company. These risks may be divided into two types, namely manageable and unmanageable risk. An unmanageable risk includes risks which are beyond the management's control, assuming continuation of the enterprise as a going concern. Each type of risk related to ESG which is not properly managed, or which the enterprise is not able to manage, is regarded as unmanageable risk. ESG risk rating measures are provided by such entities as: RobecoSAM, Sustainalytics, CDP (Carbon Disclosure Project), ISS (Institutional Shareholder Services), MSCI ESG Research, FTSE Russell, Bloomberg, Standard & Poor's Global Ratings, and Moody's. They measure exposure of a given entity to sector specific essential ESG risks and the way in which such an entity manages them. As the number of suppliers of ESG ratings grows, there appear differences in methodologies and final ratings (Avetisyan & Hockerts, 2017). Nevertheless, all providers of ESG ratings refer to companies' practices in such areas as: mining and energy production, working conditions, social relations, customer relationships, respecting consumer rights, waste management and many more.

If the issuer uses its resources in a sustainable way, it will generate certain clearly positive results from the point of view of economic efficiency. Companies which have well-developed environmental management systems should have lower costs of debt financing compared to their competitors. This means that the application of the corporate social responsibility policy may result in the lower cost of capital acquisition.

Pineau et al. (2022) found that the importance of ESG factors varies between emerging markets and developing economies (EMDEs) and developed economies. While governance is the most important factor for developed economies, creditworthiness in EMDEs is influenced by factors other than ESG. According to Zanin (2022), companies that manage their environmental issues better than other companies in the same industry are perceived as more resilient to long-term risk and receive better ratings from rating agencies. By examining the importance of non-financial ESG factors for treasury bond markets, Crifo et al. (2017) confirmed that they significantly reduce government bond spreads. Aslan et al. (2021), based on the analysis of the relationship between the ESG results of selected companies listed on the US stock exchange in the period 2002-2017 and the probability of their insolvency, confirmed that the probability of insolvency of corporate borrowers is much lower for companies with high ESG. While the stated goal of adopting ESG is to improve credit risk assessment, Yang (2020) found no consistent evidence of improving the quality of credit rating information. According to Eliwa et al. (2021) lenders include ESG information in their lending decisions, hence companies with better ESG scores have a lower cost of debt. The impact of ESG ratings on the cost of debt prevails in stakeholder-oriented countries. Kiesel and Lücke (2019), based on the analysis of Moody's rating reports from 2004-2015, noted that decisions regarding ratings consider ESG issues only to a small extent, and corporate governance plays the most important role. The relationship between the cost of debt and ESG performance was also analysed by Apergis et al. (2022), who confirmed that the cost of financing companies' debt is related to their ESG rating.

However, the cost of debt financing is affected mainly by the credit risk of the issuer and the maturity period of issued debt instruments, which usually does not depend on the type of project which is financed through the issued bonds (Scott-Quinn et al., 2015). When comparing green bonds with conventional bonds of the same issuer, Flammer (2021) observed that there is no difference in their valuation, which shows similar conclusions to studies conducted by Larcker and Watts (2019).

ESG bonds, similarly to other debt instruments, include the issuer's obligation to pay the coupon on a bond to bondholders. Therefore, their holders are exposed – apart from ESG risk – also to credit risk. Credit ratings, assigned by the credit rating agencies, are the measure of this risk, directly influencing the cost of financing. Their purpose is to evaluate the probability that the issuer of a debt liability will default on the due repayment (Goodhart, 2010). While CRAs have different measures of probability of default by bonds issuers, studies comparing Moody's, Fitch, Standard and Poor's ratings showed similarities (Ammer and Packer, 2000, Jewell and Livingston, 2000). The first letter remains consistent across all companies, while the subsequent symbols only differ in the case of Moody's ratings. The ratings are grouped according to rating description for category into investment grade (from AAA/Aaa/AAA to BBB/Baa/BBB) and speculative grade (from BB/Ba/BB to C).

The role of credit rating agencies in the corporate bonds market was analysed by Bongaerts, Cremers and Goetzmann (2012). The achieved empirical results proved the important role of credit ratings in the capital markets, because they have an impact on the interest of investors in debt instruments. The results of studies conducted, among others by Asimakopoulos et al. (2019), confirm the informational content of credit ratings. However, there are considerable differences in credit ratings of the same issuer of a debt instrument, for example Fitch grants more positive credit ratings than Moody's and S&P. In the opinion of Kisgen (2006; 2009) a change in the assessment of the creditworthiness of the issuer may have an impact on its access to external sources of financing, as well as the cost of such a financing. Studies dealing with this topic also concerned the change of prices of shares (Riaz et al., 2019) and bonds (Livingston et al., 2010) in response to the change of the credit rating.

A review of the existing literature reveals a research gap related to linking the issuer's credit rating with the coupon interest rate on the issued debt instruments which meet ESG criteria. In view of the above, the author put forward the hypothesis that having a credit rating by issuers of debt instruments which meet the ESG criteria from at least one of the selected credit rating agencies (Moody's Investors Service, Standard & Poor's and Fitch Group), has an impact on the coupon rate, which results in the lower cost of financing.

3. Data and methodology

The analysis focused on the credit rating assigned to issuers of ESG debt instruments issued in 2012-2021; only the instruments in circulation as of 31 December 2021 were included in the study, which draws upon a combination of research methodologies to complement the literature review. These methodologies include observation methods, analysis of source materials, and a method of deduction. Data for this research were acquired from the Refinitiv Eikon database. The author examined which agencies (S&P, Moody's, Fitch) most often gave the ratings to issuers of ESG debt instruments, thus, only credit ratings given by the above agencies were analysed. Currencies in which ESG instruments were denominated include EUR, USD, CNY, SEK, JPY, NOK; since 42.56% of ESG debt instruments were issued in EUR or USD, the analysis covered only these currencies. Descriptive statistics include the difference between the level of risk-free interest rate, which is a benchmark for all issuers regardless of the risk level, and the interest rate on the bond coupon on the date of issue. The risk-free rate applied in this study for USD issues was the US 20 Year Treasury Bond, whilst the German 20 Year Bond for EUR on the issue date of the ESG debt instrument.

4. Results and discussion

The issuance of ESG debt instruments involved 2,086 issuers during 2012-2021. Furthermore, 43.91% of issuers of ESG debt instruments had credit ratings given by at least one rating agency out of S&P, Moody's, and Fitch (Chart 1). Thus, 1170 issuers did not have even one credit rating from S&P, Moody's, or Fitch, out of which no credit rating was given to 17.74% of entities, while 800 issuers of ESG instruments had credit ratings granted by rating agencies other than S&P, Moody's, or Fitch.

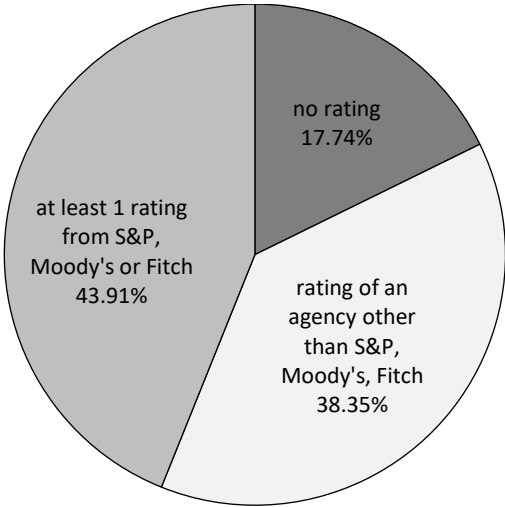


Fig. 1. Number of credit ratings of issuers of ESG debt instruments (%)

Data source: Refinitiv Eikon; calculations by the author.

The analysis of ESG debt instruments in EUR (Table 1) indicates that the highest value of average coupon rate occurred for instruments issued by entities which did not have any credit rating, whereas the lowest average coupon rate was observed for instruments whose issuers had two or three credit ratings. The lowest value, 0.61%, concerned ESG instruments whose issuers had three credit ratings, and the highest value, i.e. 3.65%, ESG instruments of entities without any credit ratings. Therefore, it can be concluded that the number of credit ratings given to an issuer has an impact on the value of the coupon rate.

Table 1. Average coupon rate of ESG instruments denominated in EUR vs. number of credit ratings of the issuer (%)

rating \ years	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
none	7.00		0.83	3.65	1.94	1.96	2.01	2.89	1.96	2.06
from one credit rating agency	3.51		1.50	1.39	1.55	1.08	2.16	1.16	0.92	1.29
from two credit rating agencies	3.63	2.88	2.37	1.61	0.80	1.25	1.15	0.75	0.43	0.83
from three credit rating agencies			1.23	0.61	0.70	0.96	1.04	0.75	0.78	0.57

Data source: Refinitiv Eikon; calculations by the author.

The results of the analysis of coupon rates of ESG instruments denominated in USD, depending on the number of credit ratings of the issuer, are presented in Table 2, whilst in 2013 there was no issue of ESG instruments in USD. The highest average coupon rate, i.e. 5.75%, occurred for ESG instruments of issuers to whom selected CRAs did not assign any credit rating. The lowest average coupon rate was charged by ESG instruments denominated in USD in 2015 by entities with credit ratings assigned by CRAs, i.e. 1.04%. For ESG instruments whose issuers had only one credit rating, the highest average coupon rate, 5.03%, was recorded in 2017. In each year under analysis, except for 2019, ESG issuers with three credit ratings applied the lowest coupon rate.

Table 2. Average coupon rate of ESG instruments denominated in USD vs. number of credit ratings of the issuer (%)

rating \ years	2012	2014	2015	2016	2017	2018	2019	2020	2021
none	5.75	3.20	4.82	3.84	3.85	3.93	4.29	3.44	3.40
from one credit rating agency		3.75		2.85	5.03	3.86	4.67	4.38	4.33
from two credit rating agencies		2.70	2.13	1.98	2.21	2.89	3.24	1.98	2.43
from three credit rating agencies	1.50	1.50	1.04	1.61	2.20	3.27	2.29	1.70	1.76

Data source: Refinitiv Eikon; calculations by the author.

In analysing the number of issues and the average coupon rate of the issue of ESG debt instruments, it was checked from which CRAs their issuers received credit ratings. In the next step, the issuers with at least one credit rating assigned by S&P, Moody's or Fitch were examined. Table 3 includes the results of the analysis for EUR, and Table 4 presents the results for ESG instruments denominated in USD.

Table 3. Number of issues, average coupon rate of ESG instruments denominated in EUR vs. credit rating of the issuer assigned by Moody's, S&P and Fitch (in %).

Moody's	S&P	Fitch	Number of issuers	Number of issues	Average number of issues per issuer	Average coupon rate of the issue
X			76	129	1.70	1.29
	x		23	40	1.74	
		x	34	52	1.53	
X	x		49	144	2.94	0.77
X		x	74	154	2.08	
	x	x	26	334	12.85	
X	x	x	84	380	4.52	0.73

Data source: Refinitiv Eikon; calculations by the author.

Among issuers of ESG instruments denominated in EUR, 68.80% had at least one credit rating assigned by Moody's, S&P, or Fitch. The biggest average number of issues was executed by the issuers with three credit ratings, i.e. 4.52, whilst entities with credit ratings assigned by two CRAs carried out 4.24 issues of instruments with ESG rating. The analysis of an average coupon rate of ESG instruments of issuers with credit rating from selected CRAs, demonstrates that the lowest interest rate applied to

the instruments whose issuers had three credit ratings, i.e. 0.73%. It is worth noting that issuers with only one rating (0.7%) and two credit ratings (0.47%) charged an average lower coupon rate, and at least one was assigned by S&P; the highest coupon rate applied to ESG instruments denominated in EUR, whose issuers had only one credit rating given by Moody's.

Table 4. Number of issues, average coupon rate of ESG instruments denominated in USD vs. credit rating of the issuer assigned by Moody's, S&P and Fitch (%).

Moody's	S&P	Fitch	Number of issuers	Number of issues	Average number of issues per issuer	Average coupon rate of the issue
X			49	87	1.78	4.37
	x		4	12	3.00	
		x	34	82	2.41	
X	x		41	111	2.71	2.47
X		x	86	217	2.52	
	x	x	13	21	1.62	
X	x	x	86	251	2.91	1.85

Data source: Refinitiv Eikon; calculations by the author.

Among the issuers of ESG denominated in USD, 65.07% had at least one credit rating from selected credit rating agencies. In the case of entities with credit ratings from three CRAs, the average number of issues of instruments meeting ESG criteria amounted to 2.91, whilst the entities with credit ratings assigned by only one of the analysed CRAs, carried out 2.08 issues of ESG debt instruments on average. The analysis of the coupon rate of the ESG instruments issued by entities with credit rating from selected credit rating agencies, indicated that the lowest interest rate was charged by the instruments of the issuers with three credit ratings, i.e. 1.85%. The highest coupon rate applied to ESG instruments denominated in USD, whose issuers had only one credit rating assigned by Fitch, i.e. 5.93%.

In analysing the impact of the credit rating of the issuer of ESG debt instruments on the value of coupon, their average interest rate depending on the credit rating, assigned by the selected CRA, was checked. The issues carried out by entities with no credit rating were also included in the analysis. Figure 2 presents the results for the issues of ESG debt instruments denominated in EUR, while Figure 3 presents the results for ESG instruments in USD.

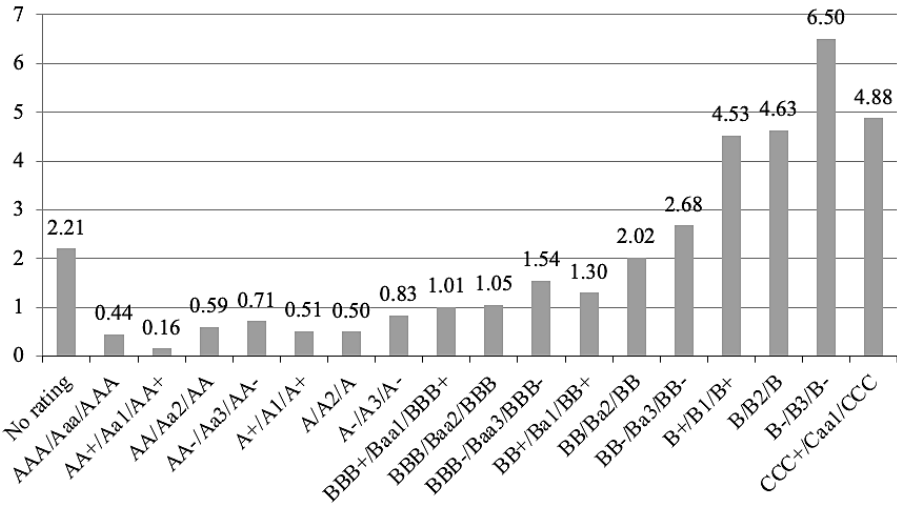


Fig. 2. Credit rating of the issuer vs average coupon rate of ESG instruments denominated in EUR (%).

Data source: Refinitiv Eikon; calculations by the author.

ESG debt instruments denominated in EUR had a lower average coupon rate if the issuer had a credit rating at the level of investment grade and BB/Ba2/BB level, i.e. the speculative grade, whereas the average coupon rate of debt instruments of the issuers with a lower credit rating starting from BB-/Ba3/BB-, was higher than for instruments issued by entities who had no credit rating at all.

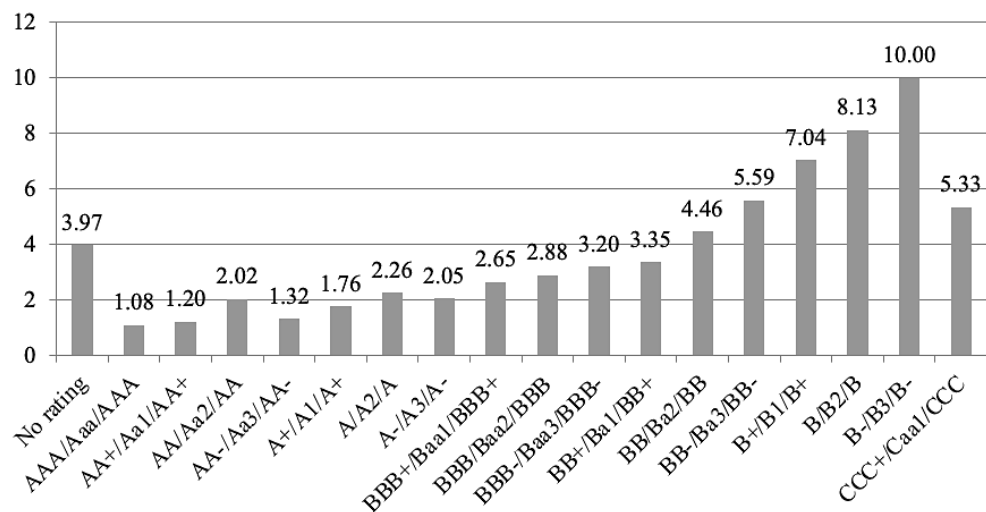


Fig. 3. Credit rating of the issuer vs. average coupon rate of ESG instruments denominated in USD (%)

Data source: Refinitiv Eikon; calculations by the author.

Similarly, ESG debt instruments denominated in USD paid a higher average coupon rate if the issuer had a credit rating at the speculative grade level starting from BB/Ba2/BB and lower, than ESG instruments of issuers with no credit rating at all (3.97%).

Descriptive statistics on the difference between the risk-free interest rate and the bond coupon interest rate on the issue date for ESG debt instruments in EUR are provided in Table 5 and for USD issues in Table 6.

Table 5. Descriptive statistics on the difference between the coupon interest rate on the ESG debt instruments issue date and the risk-free interest rate depending on the number of credit ratings of issuers of instruments denominated in EUR (p.p.)

Credit rating	No rating	From one CRA	From two CRAs	From three CRAs
No. of observations	323	224	630	366
Mean	2.33	1.52	1.01	0.91
Median	1.69	1.08	0.77	0.70
Minimum	-0.95	-0.20	-0.47	-1.07
Maximum	9.96	16.93	5.63	6.44
Standard deviation	2.02	1.68	0.92	0.84

Data source: Refinitiv Eikon; calculations by the author.

The lowest median and mean was recorded for differences between coupon rate debt instruments in EUR and risk-free interest rate of issuers with three credit ratings, whilst the highest mean and median values were recorded for issues made by issuers without a credit rating. In the case of EUR, issuers with three credit ratings issued instruments with a coupon rate of up to 1.07 p.p. lower than the risk-free rate.

The analysis of the differences between the coupon rate of ESG debt instruments in USD and the risk-free rate shows that the lowest median applied to the instruments of the issuers with three credit ratings (Table 6).

Table 6. Descriptive statistics on the difference between the coupon interest rate on the ESG debt instruments issue date and the risk-free interest rate depending on the number of credit ratings of issuers of instruments issued in USD (p.p.)

Credit rating	No rating	From one CRA	From two CRAs	From three CRAs
No. of observations	425	181	349	247
Mean	2.15	2.98	0.88	0.31
Median	2.33	1.83	0.63	0.18
Minimum	-2.51	-2.11	-2.98	-3.14
Maximum	11.97	10.96	10.63	4.78
Standard deviation	2.16	2.94	1.85	1.28

Data source: Refinitiv Eikon; calculations by the author.

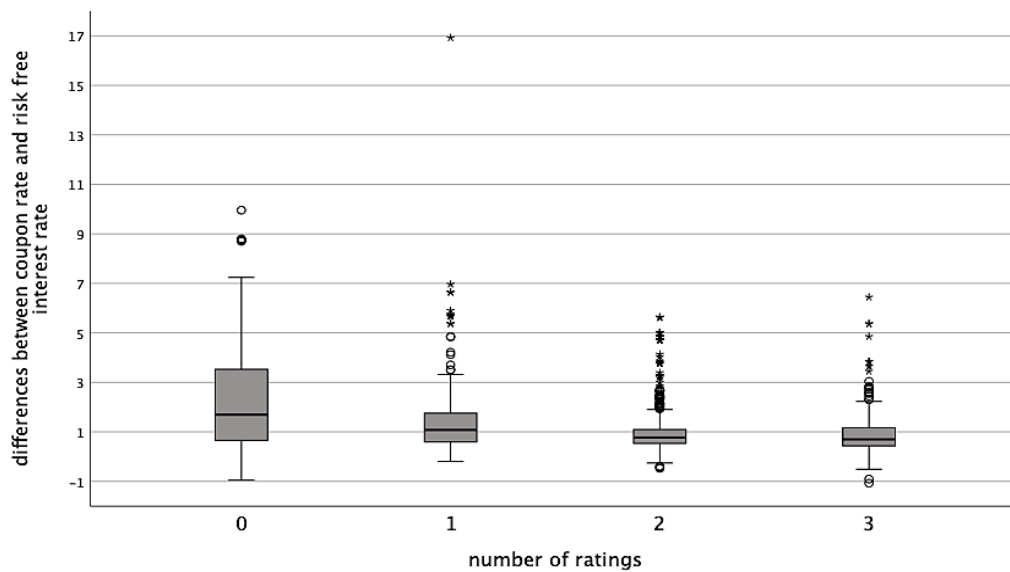


Fig. 4. Distribution of differences between coupon rate ESG debt instruments in EUR and risk-free interest rate depending on the number of credit ratings of issuers (p.p.)

Data source: Refinitiv Eikon; calculations by the author.

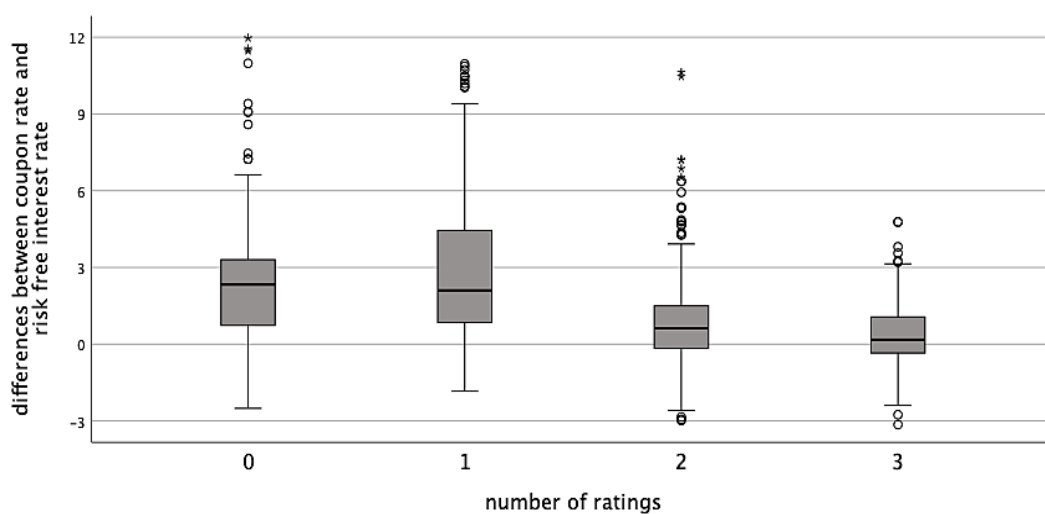


Fig. 5. Distribution of differences between coupon rate ESG debt instruments in USD and risk-free interest rate depending on the number of credit ratings of issuers (p.p.)

Data source: Refinitiv Eikon; calculations by the author.

Figure 4 presents the distribution of the differences between coupon rate debt instruments in EUR and risk-free interest rate depending on the number of credit ratings of the issuers. The median varied depending on the number of credit ratings held by the issuer. The highest median for the difference between the risk-free interest rate and the interest rate on the bond coupon on the issue date applied to ESG debt instruments in EUR of the issuers who did not have a credit rating. The lowest median, i.e. 0.70 p.p. was recorded in the case of the issuers with credit ratings from three CRAs. Outliers prevailed for the issuers without a credit rating. There was a lower interest rate on the coupon on the day of issue than the risk-free interest rate in each case. The issuers of the largest number of ESG debt instruments had ratings from two CRAs, and the maximum difference between the coupon interest rate on the ESG debt instruments issue date and the risk-free interest was the lowest at 6.44 p.p.

The distribution of the differences between coupon rate debt instruments in USD and risk-free interest rate depending on the number of credit ratings of issuers is presented in Figure 5. The issuer's lack of a credit rating determined the highest median difference between the risk-free interest rate and the coupon rate on ESG debt instruments on the issue date. Only 181 issuers had ratings from only one CRA, and the maximum difference between the coupon rate on the issue date of ESG debt instruments and the risk-free rate was the lowest for issuers' instruments with three ratings and amounted to 4.78 p.p.

5. Conclusions

This study investigated the impact of the number of credit ratings which the issuers of ESG debt instruments had on the coupon rate and the number of issues. In the period 2012-2021, only 17.74% of issuers of ESG instruments did not have any credit rating, while 53.38% of the assigned credit ratings were granted by Moody's, S&P, or Fitch.

The study confirmed the existence of a gap in the literature concerning the analysed area and led to the following conclusions. In analysing the ESG instruments, denominated both in EUR and in USD, the biggest number of issues was observed for ESG debt instruments of the issuers to which credit ratings were assigned from the three credit rating agencies. Regarding an average coupon rate, the issuers with credit ratings given by the three agencies, issued debt instruments meeting ESG criteria with the lowest coupon rate in USD and in EUR. The issuers of instruments in EUR with only one credit rating received from S&P, issued ESG debt instruments with an average lower coupon rate. The issues carried out by entities with credit ratings at the speculative grade level for selected currencies (BB-/Ba3/BB- and lower for EUR; BB/Ba2/BB and lower for USD) had a higher coupon rate of ESG debt instruments than the issuers with no credit rating at all. The analysis of the difference between the risk-free interest rate and the bond coupon interest rate on the issue date of ESG debt instruments showed that the lowest median applied to the issuers with three ratings.

This study, utilising data from the Refinitiv Eikon database for 2012-2021, investigated the potential link between credit ratings assigned to issuers of ESG instruments and their financing costs. The results confirmed the hypothesis that having a credit rating from more than one rating agency assigned to the issuers of ESG debt instruments contributes to the lower cost of the acquired financing; this applies to issuers who have a credit rating at investment grade level as well as substantial credit risk level. A review of the existing literature revealed the limited research directly comparing the credit ratings assigned to issuers of ESG debt instruments, despite the growing importance of this market. Similar analyses could be conducted for issuers of other debt types, providing valuable comparative insight. To gain a more comprehensive understanding, future studies should compare the impact of the issuer's credit rating on the coupon yield of conventional and ESG debt instruments, including the effects of assigned ratings broken down by credit risk classes.

References

- Agliardi E., & Agliardi R. (2021). Pricing climate-related risks in the bond market. *Journal of Financial Stability*, 100868. <https://doi.org/10.1016/j.jfs.2021.100868>
- Ammer, J., & Packer, F. (2000). How consistent are credit ratings? A geographic and sectoral analysis of default risk. *International Finance Discussion Papers*, 668.
- Apergis, N., Poufinas, T., & Antonopoulos, A. (2022). ESG scores and cost of debt. *Energy Economics*, 112, 106186. <https://doi.org/10.1016/j.eneco.2022.106186>
- Asimakopoulos, P., & Asimakopoulos, S. (2019). A tale of two tails: Cross credit ratings and cash holdings, *Working Paper*, 2-4.
- Aslan, A., Poppe, L., & Posch, P. (2021). Are sustainable companies more likely to default? Evidence from the dynamics between credit and ESG ratings. *Sustainability*, 13(15), 8568. <https://doi.org/10.3390/su13158568>
- Avetisyan, E., & Hockerts K. (2017). Consolidation of the ESG rating industry as enactment of institutional retrogression. *Business Strategy and the Environment*, 26 (3), 316-330.
- Bongaerts, D., Cremers, K. J. M., & Goetzmann, W. N. (2012). Tiebreaker: certification and multiple credit ratings. *The Journal of Finance*, 67 (1), 113-152. <https://doi.org/10.1111/j.1540-6261.2011.01709.x>
- Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *The Accounting Review*, 72(3), 323-349. <https://ssrn.com/abstract=2926>
- Crifo, P., Diaye, M. A., & Oueghlissi, R. (2017). The effect of countries' ESG ratings on their sovereign borrowing costs. *The Quarterly Review of Economics and Finance*, 66, 13-20. <https://doi.org/10.1016/j.qref.2017.04.011>
- Duliniec, A. (2015). *Inwestowanie społecznie odpowiedzialne – przejściowa moda czy trwała tendencja?* Zeszyty Naukowe Uniwersytetu Ekonomicznego w Krakowie 937(1), 39-49. <https://doi.org/10.15678/ZNUEK.2015.0937.0103>
- Eliwa, Y, Aboud, A., & Saleh, A. (2021). ESG practices and the cost of debt: Evidence from EU countries. *Critical Perspectives on Accounting*, 79, 102097. <https://doi.org/10.1016/j.cpa.2019.102097>
- Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, 142(2), 499-516. <https://doi.org/10.1016/j.jfineco.2021.01.010>
- Goodhart, Ch. (2010). How, If At All, should Credit Ratings Agencies (CRAs) be Regulated? In Griffith-Jones, S., Ocampo, J. A., & Stiglitz, J. E. (Eds.). *Time for a visible hand: lessons from the 2008 world financial crisis*. Oxford University Press, 164.
- Jewell, J., & Livingston, M. (2000). The impact of a third credit rating on the pricing of bonds. *Journal of Fixed Income*, 10(3).
- Kiesel, F., & Lücke, F. (2019). ESG in credit ratings and the impact on financial markets. *Financial Markets, Institutions & Instruments*, 28, 263-290. <https://doi.org/10.1111/fmii.12114>
- Kisgen, D. J. (2006). Credit ratings and capital structure. *The Journal of Finance*, 61(3), 1035-1072. <https://doi.org/10.1111/j.1540-6261.2006.00866.x>
- Kisgen, D. J. (2009). Do firms target credit ratings or leverage levels? *Journal of Financial and Quantitative Analysis*, 44 (6), 1323-1344. <https://doi.org/10.1017/S002210900999041X>
- Larcker, D. F., & Watts, E. M. (2019). Where's the greenium? *Rock Center for Corporate Governance at Stanford University Working Paper*, No. 239. Stanford University Graduate School of Business Research Paper No. 19-14. <https://doi.org/10.2139/ssrn.3333847>
- Livingston, M., Wei, D., & Zhou, L. (2010). Moody's and S&P ratings: Are they equivalent? Conservative ratings and split rated bond yields. *Journal of Money, Credit and Banking*, 42 (7), 1267-1293.
- Pineau, E., Le, P., & Estran, R. (2022). Importance of ESG factors in sovereign credit ratings. *Finance Research Letters*, 49 (C), 102966. <https://doi.org/10.1016/j.frl.2022.102966>
- Riaz, Y., Shehzad, C. T., & Umar, Z. (2019). Pro-cyclical effect of sovereign rating changes on stock returns: A fact or factoid? *Applied Economics*, 51 (15), 1-14. <https://doi.org/10.1080/00036846.2018.1527465>
- Ruoke, Y. (2020). Credit ratings in the age of environmental, social, and governance (ESG). *Corporate Social Responsibility (CSR) eJournal*. <https://doi.org/10.2139/ssrn.3595376>
- Sharfman, M. P., & Fernando, C. S. (2008). Environmental risk management and the cost of capital. *Strategic Management Journal*, 29, 569-592. <https://doi.org/10.1002/smj.678>
- Scott-Quinn, B., Cano, D., Watson, R., Fergusson, R., Pacheco C., & Kelly K. (2015). *Guide to infrastructure financing: bank loans, debt private placements and public bonds-smoothing the pathway for effective funding*. AFME-ICMA, 5-52.
- Zanin, L. (2022). Estimating the effects of ESG scores on corporate credit ratings using multivariate ordinal logit regression. *Empirical Economics*, 62, 3087-3118. <https://doi.org/10.1007/s00181-021-02121-4>

Received: October 2022, revised: March 2023